



FIRE ASSESSMENT REPORT

FC14077-01-3

FIRE RESISTANCE OF SNAP FIRE SYSTEMS PENETRATION SEALING SYSTEMS TO AS 1530.4:2014

CLIENT

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ASSESSMENT OBJECTIVE

To assess the fire resistance, in accordance with AS 1530.4:2014, with reference to AS 4072.1-2005 (including Amendment No. 1) of various Snap Fire Systems penetration sealing systems in steel framed plasterboard lined walls and concrete floor systems.

CONCLUSION

Each of the fire resistance test reports listed within Section 2 and listed in Table 7 have been reviewed and it is considered that the penetration seals within the fire resistance tests, if tested in accordance with AS 1530.4:2014, with reference to AS 4072.1-2005 (including Amendment No. 1) would achieve the FRL's as given previously listed in Table 1 to Table 6 of Section 2.

For specific construction and installation details refer to the relevant test reports.

LIMITATION

This report is subject to the accuracy and completeness of the information supplied.

BRANZ reserves the right to amend or withdraw this assessment if information becomes available which indicates the stated fire performance may not be achieved.

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The results reported here relate only to the item/s described in this report.



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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION
1	27 October 2021	Initial Issue
2	8 March 2024	Revise wording relating to the test standard and include reference to AS 4072.1-2005 and the NCC
3	7 March 2025	Inclusion of NCC statement



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1. INTRODUCTION

This report gives BRANZ's assessment on the fire resistance in accordance with AS 1530.4:2014, of a range of Snap Fire Systems penetration sealing systems previously tested in steel framed plasterboard lined walls and concrete floor systems.

2. BACKGROUND

2.1 Wall Systems

2.1.1 BRANZ Fire Resistance Test FP 4874

In BRANZ fire resistance test FP 4874 nine pipe penetrations and their respective seals were tested in a nominally 128 mm thick steel framed plasterboard wall in accordance with AS 1530.4-2005. The steel framed plasterboard wall comprised 64 mm x 0.55 mm thick steel stud with two layers of 16 mm thick Boral Firestop on each face. The results are given in Table 1 below.

Table 1: Summary of FP 4874 Results

Specimen	Collar Designation	Pipe Designation	FRL
1	110R (Retro-fit)	100 mm PVCu SC DWV (with elbow socket in collar)	-/180/120
4	63R (Retro-fit)	50 mm PVCu DWV	-/180/120
5	50R (Retro-fit)	40 mm PVCu DWV (with elbow socket in collar)	-/180/180
6	50R (Retro-fit)	40 mm PVCu DWV	-/180/120
7	110R (Retro-fit)	100 mm PVCu SC DWV	-/180/180
8	110R (Retro-fit)	110 mm x 4.3 mm PE100 SDR 26	-/180/120
9	65-80R (Retro-fit)	80 mm PVCu DWV	-/180/120
10	84R (Retro-fit)	65 mm PVCu DWV	-/180/120
11	50R (Retro-fit)	40 mm x 3 mm PE80 S12.5	-/180/180

2.1.2 BRANZ Fire Resistance Test FP 5663

In BRANZ fire resistance test FP 5663 ten pipe penetrations and their respective seals were tested in a nominally 96 mm thick steel framed plasterboard wall in accordance with AS 1530.4-2005. The steel framed plasterboard wall comprised 64 mm x 0.5 mm thick steel stud with one layer of 16 mm thick Boral Firestop on each face. The results are given in Table 2 below.



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Table 2: Summary of FP 5663 Results

Specimen	Collar Designation	Pipe Designation	FRL
1	32Gas	20 mm Pex-Al-Pex	-/90/60
2	32R	25 mm P-PVC	-/90/60
3	32R	25 mm PVC Conduit	-/90/60
4	50R	40 mm PVC	-/90/60
5	50R	40 mm HDPE	-/90/60
6	50R	50 mm PVC	-/90/60
7	63R	65 mm PVC	-/90/60
8	65-80R	80 mm PVC	-/90/60
9	110R	100 mm PVC (Sandwich Construction)	-/90/60
10	110R	110 mm HDPE	-/90/60

2.2 Floor Systems

2.2.1 BRANZ Fire Resistance Test FP 4428

In BRANZ fire resistance test FP 4428 three service penetrations and their respective seals were tested in a nominally 170 mm thick concrete floor slab in accordance with AS 1530.4-2005. The results are given in Table 3 below.

Table 3: Summary of FP 4428 Results

Specimen	Collar Designation	Service Designation	FRL
1	175 mm ID Type A	150 mm PVC DWV pipe with two 90° elbows	-/240/240
2	118 mm ID Type B	100 mm PVC DWV with plastic ABS floor grate	-/240/240
3	175 mm ID Type A	Eight lengths of pre insulated paired copper refrigeration tube and four lengths of standard extension power cable	-/120/0

2.2.2 BRANZ Fire Resistance Test FP 4640

In BRANZ fire resistance test FP 4640 eight pipe penetrations and their respective seals were tested in a nominally 150 mm thick concrete floor slab in accordance with AS 1530.4-2005. The results are given in Table 4 below.



Table 4: Summary of FP 4640 Results

Specimen	Collar Designation	Pipe Designation	FRL
2	HP 100 R (Retro-fit)	100 mm HDPE DWV	-/240/240
3	110 R (Retro-fit)	100 mm PVCu DWV	-/240/240
4	SNAP 63 R (Retro-fit)	50 mm PVCu DWV	-/240/240
5	H 100 FWS	50 mm PVCu DWV	-/240/240
6	H 50 S	50 mm HDPE DWV	-/240/240
7	LP 50 R (Retro-fit)	50 mm PVCu DWV	-/240/240
9	SNAP 63 R (Retro-fit)	50 mm PVCu DWV with 90° elbow socket	-/240/240
10	110 R (Retro-fit)	100 mm PVCu DWV with 90° elbow socket	-/240/240

2.2.3 BRANZ Fire Resistance Test FP 4837

In BRANZ fire resistance test FP 4837 nine pipe penetrations and their respective seals were tested in a nominally 150 mm thick concrete floor slab in accordance with AS 1530.4-2005. The results are given in Table 5 below.

Table 5: Summary of FP 4837 Results

Specimen	Collar Designation	Pipe Designation	FRL
1	110R (Retro-fit)	110 mm x 4.3 mm PE100 SDR 26	-/240/240
2	65-80R (Retro-fit)	80 PVCu DWV	-/240/240
3	50R (Retro-fit)	40 PVCu DWV	-/240/240
5	H100S (Cast-in)	100 PVCu SC DWV	-/240/240
6	L100FWS (Cast-in)	100 PVCu SC DWV (Floor Waste with Trap)	-/240/240
7	H100FWS (Cast-in)	100 PVCu SC DWV	-/240/240
8	50R (Retro-fit)	40 mm x 3 mm PE80 S12.5	-/240/240
9	65-80R (Retro-fit)	65 PVCu DWV	-/240/240
10	50R (Retro-fit)	40 PVCu DWV (with Elbow socket in collar)	-/240/240

2.2.4 BRANZ Fire Resistance Test FR 5670

In BRANZ fire resistance test FR 5760 twenty seven pipe penetrations and their respective seals were tested in a nominally 150 mm thick concrete floor slab in accordance with AS 1530.4-2005. The results are given in Table 6 below.



Table 6: Summary of FR 5670 Results

Specimen	Collar Designation	Pipe Designation	FRL
1	LP100R-C	80 mm PVC	-/180/120
2	H100FWS-RR	100 mm PVC-SC	-/240/240
3	H50FWS-RR	50 mm PVC	-/240/240
4	H150S-RR	150 mm PVC-SC	-/240/180
5	H150S-RR	160 mm HDPE	-/180/120
6	H150S-RR	160 mm Raupiano	-/240/180
7	H150S-RR	100 mm BEP PVC-U-SC	-/240/240
8	H150S-RR	125 mm HDPE	-/240/240
9	H150S-RR	100 mm Raupiano	-/240/180
10	32R	16 mm Pex-a	-/240/180
11	32R	20 mm Pex-a	-/240/240
12	32R	25 mm Pex-a	-/240/240
13	32R	16 mm Pex-b	-/240/240
14	32R	20 mm Pex-b	-/240/240
15	32R	25 mm Pex-b	-/240/240
16	H50S-RR	16 mm Pex-a	-/240/240
17	H50S-RR	16 mm Pex-b	-/240/240
18	H50S-RR	20 mm Pex-a	-/240/240
19	H50S-RR	20 mm Pex-b	-/240/240
20	H100FWS-RR	100 mm Blank, 0.4 mm galv steel plate	-/240/240
22	H100FWS-RR	100 mm BEP PVC-U-SC	-/240/240
23	H100S-RR	65 mm PVCu	-/240/60
24	H50S-RR	40 mm PVC	-/240/120
26	H50FWS-RR	50 mm HDPE	-/240/240
27	LP50R	40 mm PVC	-/240/120
28	H65S-RR	40 mm HDPE	-/240/240
29	H50S-RR	32 mm PVCu	-/240/240



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3. DISCUSSION

3.1 AS 1530.4-2005 vs 2014

In the fire resistance tests discussed in Section 2 the specimens were tested in accordance with fire resistance test standard AS 1530.4–2005. A comparison has been made between this version of the test standard and the *Standard Fire Test* (AS 1530.4:2014) as defined in the NCC.

With respect to the fire resistance testing of penetrations there are no significant difference between the two versions of the test standard. Therefore, it is considered the fire resistance tests referenced in Section 2 are equivalent to the *Standard Fire Test* (AS 1530.4:2014) referenced in the NCC Volume One, Specification S1C2(b).

3.2 Compliance with the Australian NCC 2022

The NCC 2022 states:

"SIC2 Rating

[2019: Sch. 5: 2]

A building element meets the requirements of this Specification if—

(b) it is identical with a prototype that has been submitted to the Standard Fire Test, or an equivalent or more severe test, and the FRL achieved by the prototype without the assistance of an active fire suppression system is confirmed in a report from an Accredited Testing Laboratory which—

- (i) describes the method and conditions of the test and the form of construction of the tested prototype in full; and*
- (ii) certifies that the application of restraint to the prototype complied with the Standard Fire Test.*

(c) is confirmed in a report from an Accredited Testing Laboratory which— (i) certifies that the building element is capable of achieving the FRL despite the minor departures from the tested prototype; and describes the materials, construction and conditions of restraint which are necessary to achieve the FRL;”

The test reports within Section 2 and listed in Table 7 are assessed to AS 1530.4:2014 and this report complies with the NCC SIC2(b). With respect to the fire resistance testing of penetrations there are no significant difference between the two versions of the test standard, and it is considered in relation to severity as referenced in NCC SIC2(b) that the fire resistance tests referenced are equivalent to the Standard Fire Test (AS 1530.4:2014).



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3.3 Test Reports

Each of the fire resistance tests referenced in Section 2 have been reviewed and it is considered the penetration systems as tested would achieve the stated FRL's if tested in accordance with AS 1530.4:2014.

Table 7 lists the test reports reviewed in this assessment. For specific details refer to the relevant fire resistance test report.

Table 7: Referenced Tested Reports

Test Report	Element Tested With
FP 4874	Steel framed plasterboard wall comprised 64 mm x 0.55 mm thick steel stud with two layers of 16 mm thick Boral Firestop on each face
FP 5663	Steel framed plasterboard wall comprised 64 mm x 0.5 mm thick steel stud with one layer of 16 mm thick Boral Firestop on each face
FP 4428	Nominal 170 mm thick concrete floor slab
FP 4640	Nominal 150 mm thick concrete floor slab
FP 4837	Nominal 150 mm thick concrete floor slab
FR 5670	Nominal 150 mm thick concrete floor slab

4. CONCLUSION

Each of the fire resistance test reports listed within Section 2 and listed in Table 7 have been reviewed and it is considered that the penetration seals within the fire resistance tests, if tested in accordance with AS 1530.4:2014, with reference to AS 4072.1-2005 (including Amendment No. 1) would achieve the FRL's as given previously listed in Table 1 to Table 6 of Section 2.

For specific construction and installation details refer to the relevant test reports.



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